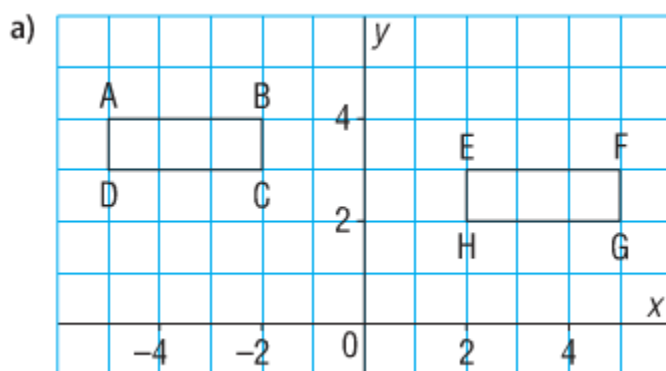### 7.7 Identifying Types of Symmetry on the Cartesian Plan – Notes
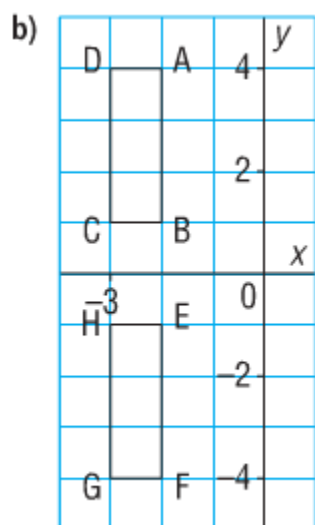
<u>Example (1):</u> For each pair of rectangles ABCD and EFGH, determine whether they are
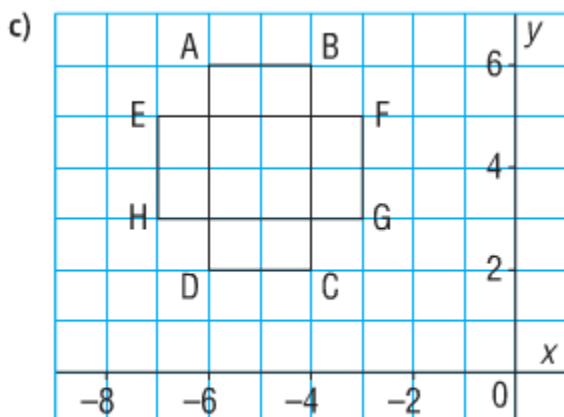related by symmetry.

Line symmetry or rotational symmetry.

a)

Rotational Symmetry → 180° about the
point (0,3). Rotational symmetry of
order 2.

No line symmetry.

b)

Line symmetry → through the x-axis.

Rotational Symmetry of order 2, when ABCD is
rotated 180° about the point (-2.5, 0).

c)

4 Lines of Symmetry

Rotational Symmetry of order 4 when
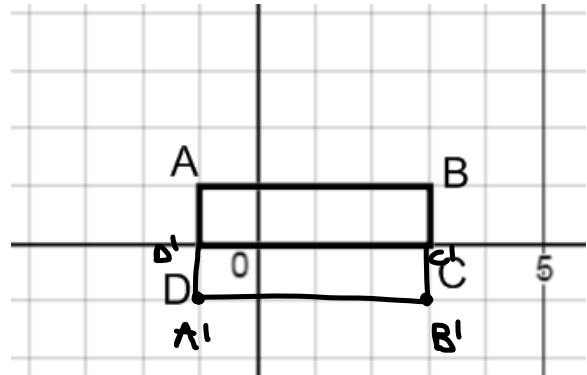rotated 90° about the point (-5,4).

Example (2): Draw the image of rectangle ABCD after each transformation.
Write the coordinates of each vertex and its image.
Identify and describe the type of symmetry that results.
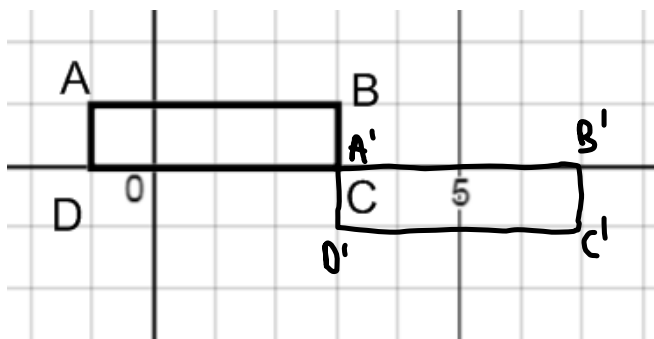
a) a rotation of 180° about the origin (0,0)
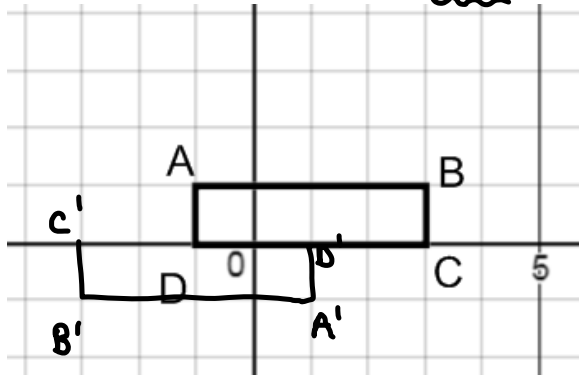
A'(1,-1)
B'(-3,-1)
C'(-3,0)
D'(1,0)

b) a reflection in the x-axis

A'(-1,-1)
B'(3,-1)
C'(3,0)
D'(-1,0)

c) a translation 4 units right and 1 unit down.


A'(3,0)
B'(7,0)
C'(7,-1)
D'(3,-1)

Example 3: Draw the image of pentagon PQRST after each translation below.
Label the vertices of the pentagon and its image, and list their coordinates.
If each diagram has symmetry, describe it.
If each diagram does not have symmetry, explain how you know.

a) a translation L2

-5   0

P'   P
T'   Q'   Q
S'   S R'   R   -5
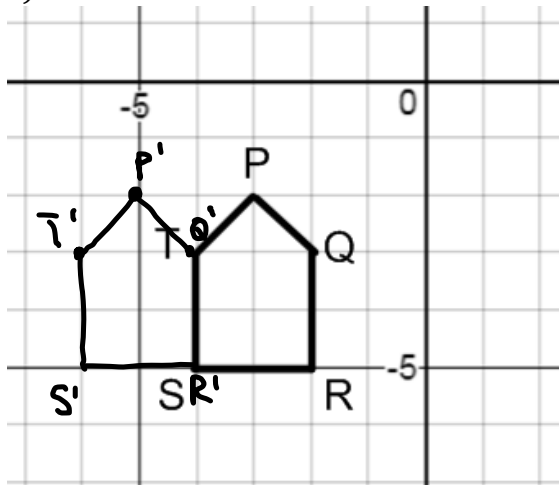
Line Symmetry
through x = -6

No Rotational Symmetry.

b) a translation L2, D3

-5   0

P

T   Q

P'
T'   S   Q'   R   -5

S'   R'

-10
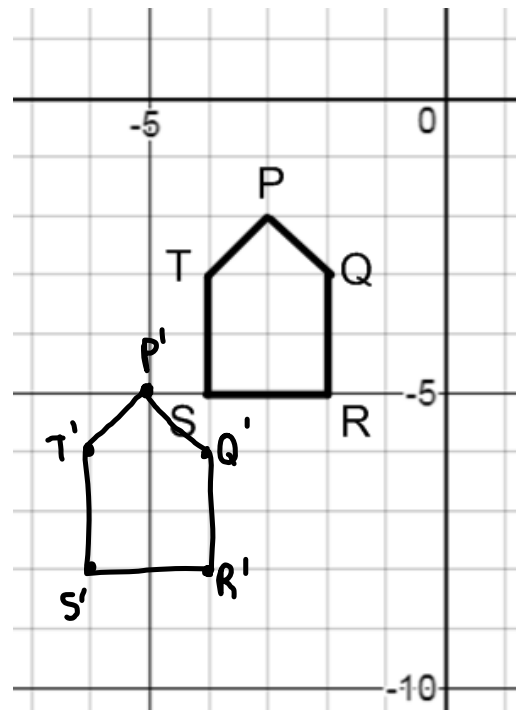
No Line Symmetry.

No Rotational Symmetry.